JOINT BASE CHARLESTON-AIR
INSTALLATION RESTORATION PROGRAM
SOUTH CAROLINA

REVISED STATEMENT OF BASIS FOR NO FURTHER ACTION

AREA OF CONCERN (AOC) R (IRP SITE SS043) – TAXIWAY E JP-4 PIPELINE LEAK

Introduction

Joint Base Charleston-Air (JB CHS-Air) is located in Charleston County, approximately 10 miles northwest of Charleston, South Carolina. JB CHS-Air comprises approximately 4,000 acres and has a population of approximately 8,500.

This revised Statement of Basis (SoB) pertains to Air Force Installation Restoration Program (IRP) Site SS043 – Taxiway E JP-4 Pipeline Leak which is included in the Base Resource Conservation and Recovery Act (RCRA) Permit #SC3 570 024 460, dated October 4, 2010. The Permit also established site Land Use Control (LUC) requirements as groundwater use restrictions and land use change notification to the South Carolina Department of Health and Environmental Control (DHEC).

The previous site SoB (September 2008, Revised May 2009, Administrative Record [AR] 1529) remedy was for annual groundwater monitoring at the four site monitoring wells for benzene and naphthalene only. The remedy began in February 2009 and would continue until benzene was reduced to below its Maximum Contaminant Level (MCL) and naphthalene was reduced to below its Risk Based Screening Level (RBSL) for three consecutive years of monitoring. The RCRA Permit also set forth the same requirement.

This revised Statement of Basis (SoB) explains the rationale for deciding that at AOC R, the site of an underground fuel leak, the remedy of groundwater monitoring is complete and No Further Action (NFA) is appropriate for the site. This document is intended to inform the general public of the completion of the remedy for AOC R. This document also provides information on how the public can be involved in the NFA decision process. DHEC will not finalize the NFA decision until the public comment period has ended and all information submitted during the public comment period has been reviewed and considered.

This SoB should not be considered the primary source of information for this site. The SoB summarizes information that can be found in greater detail in the following documents:

- Final Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report – Site AOC R (SS-43), Earth Tech, December 2003. In a letter addressed to Mr. Al Urrutia, Charleston Air Force Base, dated April 27, 2004, DHEC requested that

additional soil sampling be conducted to better define the extent of contamination.

- Final RFI Phase II Report – AOC R (SS-43) North Wind, May 2007. The RFI was approved by Ms. Keisha Long, of DHEC's Corrective Action Engineering Section of the Division of Waste Management, in a letter addressed to Mr. Al Urrutia of JB CHS-Air dated September 12, 2007.

- Final Corrective Measures Study (CMS) – AOC R (SS-43), North Wind, August 2008. The CMS was approved by Rachel Donica Poole, of the DHEC Corrective Action Engineering Section of the Division of Waste Management in a letter addressed to Mr. Al Urrutia of JB CHS-Air dated August 28, 2008.

- Draft/Final 2015 Annual Groundwater Monitoring Report – AOC R (SS043), FPM Remediations, Inc., March 2015. The Draft/Final Annual Groundwater Monitoring Report was approved as Final by Mr. William Britton, Jr., of the DHEC Department of Defense Corrective Action Section of the Division of Waste Management in a letter addressed to Ms. Dana T. Holsclaw of JB CHS-Air dated May 7, 2015.

The RFIs, the CMS, and the Annual Groundwater Monitoring Report can be found at JB CHS-Air and the DHEC office located in Columbia, South Carolina (addresses provided in the last section of this document). DHEC encourages the public to review these documents in order to gain a more thorough understanding of AOC R and the activities that have been conducted there.

Proposed Decision

The recommended decision for AOC R is NFA. The remedy selected for AOC R has been completed. Groundwater monitoring began in 2005 and continued through January 2015. Groundwater sampling in April 2013, April and August 2014, and January 2015 indicated that benzene and naphthalene are below the MCL and the RBSL, respectively. Because groundwater contamination has decreased below these levels, NFA is recommended for the site. The NFA decision will mean that the LUCs will be removed, and groundwater sampling and LUC inspections will cease. The South Carolina Bureau of Land and Waste Management, Division of Waste Management, Department of Defense Corrective Action section concurred with a NFA decision in a letter dated May 7, 2015 (DHEC, 2015b).

Site Background

Description

AOC R is located in the east-central portion of JB CHS-Air, at the intersection of Taxiways D and E, as shown on Figures 1 and 2 of this report. The site is relatively flat and primarily covered with grass. Major site features are the drainage ditches, which join at a culvert that drains offsite to the northeast. Surface water flows in the drainage ditches only immediately after a rain event. The only two surface water bodies near the site are Turkey Creek and Runway Creek. The perennial portion of Turkey Creek is approximately 2,600 feet east of the site, and Runway Creek is approximately 11,000 feet south southwest.

During the restoration of Taxiway E in 2000, soils contaminated with jet fuel were encountered, assessed, and remediated. As part of the Taxiway restoration project, approximately 1,200 tons of contaminated soils were excavated in 2000, disposed of offsite, and the area was backfilled with clean soil. No confirmatory soil samples were taken during this initial removal action, and as a result, it is not known whether all contaminated soils were removed. In 2004, shallow soil along the southwest edge of the site was excavated during replacement of a section of Taxiway D. In 2013, a new 10-inch fuel transfer pipeline was installed.

Investigations

RCRA Facility Investigation (RFI) Phase I (December, 2003)

The 2003 RFI report found that select heavy metals and semi-volatile organic compounds (SVOCs) were detected in soil samples from AOC R in concentrations exceeding both the established JB CHS-Air background concentrations and USEPA Region 9 Soil Screening Levels.

The 2003 RFI report identified benzene as the only volatile organic compound (VOC) detected in groundwater above the applicable criteria, although benzene was not detected in soil samples. No SVOCs or metals were detected in groundwater during the investigation. After DHEC reviewed the January 2003 RFI, they requested that a soils investigation be conducted in an attempt to define the source and extent of metals and SVOCs contamination.

RFI Phase II (May, 2007)

The 2007 RFI Phase II report found that slightly elevated metals concentrations in shallow soils essentially covered the entire study area (North Wind, 2007). Arsenic and selenium were detected in virtually all of the 50 soil samples.

Naphthalene was the only VOC in the soil samples that exceeded applicable criteria. Benzene was not detected in any of the soil samples.

Site Risk

A Baseline Human Health Risk Assessment (BRA) was conducted as part of the 2003 RFI for AOC R. Additionally, a Supplemental Human Health Risk Assessment (SRA) was conducted as part of the 2007 Phase II RFI for AOC R (North Wind, 2007). The purpose of the SRA was to further evaluate risks associated with exposure of humans to chemicals identified within soils at AOC R. Chemicals of Potential Concern (COPCs) and their detected concentrations from the RFI for both soils and groundwater at AOC R are summarized in Attachment 1.

The site human health risk assessment identified all chemicals found in concentrations that could cause more than one additional cancer in one million people. The Incremental Lifetime Cancer Risk (ILCR) was used to quantify the risk.

The risk assessment also identified whether or not concentrations of chemicals would result in harmful effects other than cancer, and calculates Hazard Indices (HIs) for those chemicals that do not cause cancer. The HI compared an existing amount of a chemical to an amount that might cause harmful non-cancer effects in people. If the

HI is greater than one, there could be concern that harmful effects will occur in people.

The assessment also considered uncertainty in the risk assessment process, as well as current and potential future land uses. Acceptable human risk generally means that 1) the risk of cancer is less than one in 10,000 for a person exposed to the chemicals at the site, and 2) no harmful non-cancer effects are expected.

The BRA identified the following final Contaminants of Concern (COCs):

- Current Land Use Scenario: Arsenic in surface soil,
- Future Base Worker Scenario: Arsenic in surface soil, and
- Future Residential Scenario: Arsenic in surface and subsurface soil, and 2-methylnaphthalene, naphthalene, benzene, and arsenic in groundwater.

The SRA identified arsenic as a final COC in surface and subsurface soils for the future residential scenario.

The BRA and the SRA were extensively reviewed during the preparation of the 2008 CMS. In the course of the review, errors in the risk analysis for both the surface soil and subsurface soil were identified. These errors were described and corrections were provided in the 2009 SoB (North Wind, 2009), summarized below. When the errors were corrected, it was found that the arsenic in surface and subsurface soil poses no risk.

- A 2001 United States Environmental Protection Agency (USEPA) Memorandum suggests a remedial goal for arsenic in soil of 20 mg/kg for residential land use. None of the valid surface soil samples collected from AOC R exceeded 20 mg/kg. Therefore, surface soils at AOC R are below USEPA-suggested Remedial Goals.
- A comprehensive review of background concentrations of arsenic in surface soils at JB CHS-Air showed that arsenic levels in soil at AOC R are well within the naturally occurring range.
- Subsurface soil risk was incorrectly calculated for the future residential scenario. This scenario is inappropriate because samples were taken at or below a depth of two feet. Based on USEPA guidance, the appropriate scenario for these soils is the On-site Construction Worker/Excavation Scenario.

Remedy Implementation

The site remedy was selected for AOC R in 2009, consisting of annual sampling of the four groundwater monitoring wells located at the AOC R site for benzene and naphthalene only. That remedy required annual sampling until benzene was below its MCL and naphthalene was below its RBSL for three consecutive years.

Groundwater monitoring at AOC R began in 2005. Groundwater samples were collected every year from the four monitoring wells at the site. Groundwater results for benzene and naphthalene are summarized in Tables 1 and 2 and depicted in graphs as Figures 3 and 4. Benzene was only detected in

groundwater at monitoring well AOCR-MW-03, and was never detected in groundwater from the other three wells. Benzene and naphthalene concentrations in groundwater decreased over time. As of the January 2015 monitoring event, naphthalene concentrations have been below its RBSL for the past seven consecutive years, and benzene concentrations in groundwater have been below its MCL for the past three consecutive years. The 2015 Annual Groundwater Monitoring Report (FPM Remediations, Inc. [FPM], 2015b) recommended NFA for the site, that the remedy be considered complete, and groundwater monitoring be terminated. DHEC approved that report and concurred with the NFA recommendation in a letter dated May 7, 2015 (DHEC, 2015b).

The April 2014 sampling results from monitoring well AOCR-MW-03 were considered erroneous because the monitoring well condition was found by sampling staff to be compromised (the vault was filled with sediment and the plug on the inner casing was loose). Sampling staff cleaned out the well vault and replaced the plug on the inner casing after collecting the sample. In addition, there was a large difference between the primary and field duplicate sample, with benzene slightly above the MCL in the primary sample and below the MCL in the field duplicate. The field duplicate is a second sample collected from the same well at the same time, and is used for assessing how precise the sampling is. An additional groundwater sample was collected from that well in August 2014, and neither benzene nor naphthalene were detected. The 2014 Annual Groundwater Monitoring Report (FPM, 2015a) recommended that the results of the April 2014 sampling event be disregarded, and only the results of the August 2014 re-sampling event be considered for monitoring compliance purposes. That report was approved by DHEC in a letter dated February 27, 2015 (DHEC, 2015a).

Statutory Authorities

This document is being issued in accordance with 40 United States (U.S.) Code of Federal Regulations (CFR), in compliance with Federal hazardous waste management requirements. The JB CHS-Air Corrective Action Program is conducted under the authority of Sections 3004(u), 3004(v), 3005(c)(3), 3008(h), 3013, 6001, and 7703 of RCRA (42 U.S.C 6901 et seq.) as amended by the Hazardous and Solid Waste Amendment (HSWA) of 1984 (Pub. L. No. 98-616, 98 Stat. 3221) and the Federal Facility Compliance Act of 1992 (FFCA) (Pub. L. J02-386, J06 Stat. 1505).

This SoB is part of the corrective action process and is a requirement of the RCRA Corrective Action Permit, referred to as the RCRA Permit, issued to JB CHS-Air by DHEC.

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